Partner Reported Opportunities (PROs)
For Reducing Methane Emissions

Test and Repair Pressure Safety Valves

Compressors/Engines ☐
Dehydrators ☐
Pipelines ☐
Pneumatics/Controls ☐
Tanks ☐
Valves ■
Wells ☐
Other ☐

Applicable sector(s):

■ Production ■ Processing ■ Transmission and Distribution

Partners reporting this PRO: Marathon Oil Co.

Other related PROs: Test Gate Station Pressure Relief Valves with Nitrogen, Begin DI&M at Remote Facilities

Technology/Practice Overview

Description

If pressure in a compressor, pipeline or vessel surges to levels exceeding maximum allowable operating pressure, pressure safety valves (PSV) open and vent excess gas pressure to the atmosphere. Over time, the seals wear or become fouled with process debris, and leak methane containing gas to the atmosphere. Small leaks tend to grow larger through erosion-corrosion.

The partner reported a practice of testing pressure safety valves for leakage, and repairing them when cost-effective. A proactive testing and repair program can yield significant methane emission reductions.

Methane Savings

170 Mcf/yr

Costs

Capital Costs (including installation)

None

Operating and Maintenance Costs (Annual)

☐ < $100 ■ $100-$1,000 ☐ > $1,000

Payback (Years)

☐ 0-1 ☐ 1-3 ■ 3-10 ☐ > 10

Principal Benefits

Reducing methane emissions was:

■ **A primary justification for the project** ☐ **An associated benefit of the project**

Operating Requirements

Testing may be done with an organic vapor analyzer (OVA), acoustical leak detector or high-volume sampler while PSVs are in service. Safety precautions must be taken while testing operating equipment.

Applicability

This practice can be applied to all pressure safety valves.

Methane Emission Reductions

The methane emission savings are determined for compressor PSV. The emission factor averages 57.5 Mcf per year per valve. One partner reported methane savings of 853 Mcf/yr.

Economic Analysis

Basis for Costs and Savings

Methane emission reductions of 170 Mcf/yr apply to a compressor with 3 PSVs: two intermediate stages and the discharge line.

Discussion

PSV leakage eventually grows to a volume that would economically justify the investment in manpower and equipment to find and repair an individual valve. This practice is more cost effective when applied to a large collection of valves.